REMARKS

Claims 1-46 are pending. Claims 1, 21, and 34-37 are the independent claims.

We acknowledge the Examiner's indication that claims 1-33 are allowed.

The remaining claims (claims 34-46) stand rejected as obvious over Hill (U.S. Patent 6,137,574) in view of an article by Kuhling ("Frequency doubling within the resonator of a Helium Neon laser" Laser und Optoelektronik). In particular, the action takes the position that it would have been obvious to use the Helium Neon of Kuhling in the dispersion interferometer of Hill. We disagree.

Even assuming that there is some motivation for this particular combination, something we do not concede, we submit that the proposed combination must fail because the helium neon laser in Kuhling does not provide "two harmonically related, single-frequency output beams," as required by each of the rejected independent claims (claims 34-37), at least not at any meaningful output power suitable for the interferometer of Hill, or for that matter, the interferometers of claims 34 or 35 or the measurements of claims 36 or 37.

To the contrary, Kuhling describes a Helium-Neon laser that provides only a frequency-doubled output beam. The laser does not also provide a second output beam at the fundamental frequency (at least not beyond an undesired leakage level). For example, Kuhling emphasizes that his laser provides a frequency-doubled UV output:

> "The frequency-doubled helium-neon laser could thus become a simple and inexpensive continuous UV laser source in the area of small output powers. With the powers achieved to date, the system is already quite comparable to the helium-cadmium laser which delivers UV power of 1-10 mW at 325 nm, depending on size." (page 8, 2nd paragraph of the English translation)

To make this possible, Kuhling explains that the losses at the fundamental frequency must be kept to a minimum:

> "[E]fficient frequency doubling within the resonator is possible even with a low-power laser such as a helium-neon laser. To achieve high fundamental power [in the resonator cavity], the resonator geometry and optical components must be selected and optimized for the smallest losses." (page 7, last paragraph of English translation).

In other words, contrary to trying to produce an output beam at the fundamental frequency, Kuhling is trying to minimize any leakage of the fundamental from the resonator cavity in order to enhance the output power of the frequency-doubled output. This is further evident from Kuhling's selection of resonator mirrors that are all highly reflective at the fundamental frequency (of 633 nm):

> "The resonator mirrors used had 99.93% reflectivity at 633 nm, and the internal lens of the linear resonator had residual reflection of 0.15-0.2% per surface. Thus the basic losses (including losses on the Brewster windows) are roughly 1.2% for the linear and roughly 0.6% for the folded resonator. Thus, fundamental powers within the resonator of up to 2 W or up to 8 W were measured." (page 6, last paragraph of the English translation)

Accordingly, we ask the Examiner to withdraw the rejection.

Moreover, we note that even though the claims have not been amended since filing the application, the present action is the fourth non-final action on the merits. Therefore, assuming the Examiner is persuaded by the arguments above and withdraws the present rejection, we respectfully request that all claims be allowed and no further rejections be issued.

BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE
UNITED STATE PATENT AND TRADEMARK OFFICE

LIMITED RECOGNITION UNDER 37 CFR § 10.9(b)

Dr. Marc M. Wefers is hereby given limited recognition under 37 CFR §10.9(b) as an employee of Fish & Richardson P.C., to prepare and prosecute patent applications wherein the patent applicant is the client of Fish & Richardson P.C. and the attorney or agent of record in the applications is a registered practitioner who is a member of Fish & Richardson P.C. This limited recognition shall expire on the date appearing below, or when whichever of the following events first occurs prior to the date appearing below: (i) Dr. Marc M. Wefers ceases to lawfully reside in the United States, (ii) Dr. Marc M. Wefers' employment with Fish & Richardson P.C. ceases or is terminated, or (iii) Dr. Marc M. Wefers ceases to remain or reside in the United States on an H-1B visa.

This document constitutes proof of such recognition. The original of this document is on file in the Office of Enrollment and Discipline of the U.S. Patent and Trademark Office.

Expires: December 23, 2003

Harry I. Moatz
Director of Enrollment and Discipline